

INTERVIEW WITH MAURICE G. KENNEDY  
INTERVIEWED BY ANDREW DUNAR  
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1. Dunar . . . I might ask you to start just what the nature of what your responsibilities have been on Station and the nature of your relations, your dealings with Marshall.

2. Kennedy Our office is the Mission Operations Project Office, the Space Station Mission Operations Project Office. We are one of six level three projects: work package 1; work package 2; work package 4: MOPO, Mission Operations Project Office; and then the KSC Operations Office; and then their relatively new POPO if you will at Marshall, Payload Operations Project Office at Marshall. Our relationship on Space Station is with two elements at Marshall: work package 1 only and then the POGO element that's there. I've been in this job about two years. I'm the Deputy Manager of the Mission Operations Project Office. We deal with the project managers and project support personnel in both the work package at Marshall and Payload Operations Project Office at Marshall. That's the primary interface. Of course all six projects work for the level two program.

3. Dunar Where you involved at all in Station work before you came to this office?

4. Kennedy No.

5. Dunar Where did you come from?

6. Kennedy I came from the STS operations world, and I was the branch chief for Payload Operations.

7. Dunar Did you work with Marshall at all in that capacity?

8. Kennedy Yes we did.

9. Dunar I was wondering maybe first if you could comment a little bit on the nature of your work. I'm presuming on payloads with Marshall?

10. Kennedy Well, Marshall builds some payloads, and then Marshall is responsible for the Spacelab program, and they have some of the Spacelab flights that they integrate, plan, and conduct. Other Spacelab flights are integrated, planned, and conducted by JSC and Europeans. The D1 and D2 Spacelab flights, and the Japanese have Spacelab flights. As the chief of the payload operations branch, we were responsible for the integration of all payloads into the STS of the planning, the training, and the conduct of payload operations support. So, whenever a payload was built by

Marshall, then we would interface with the Marshall people as if they were our customer. They had built this payload and in some cases the missions management was the key interface for us also. Then on the flights where Marshall managed a Spacelab flight, we were the interface between the control center here, our people would interface between the control center here, and the POCC that was at Marshall.

11. Dunar When the POCC was operating at Marshall, they were in control then of everything other than the orbiter right? Everything that was going on in Spacelab itself, they were controlling it?

12. Kennedy That's right. Now the commanding was through the orbiter [?37].

13. Dunar Were there any problems in that relationship in which that was developed?

14. Kennedy What do you mean?

15. Dunar Well, the difference in other words between with ordinarily JSC handling all operations with a more remote station and with I suppose setting it up maybe more so than actually once operations were being conducted by that time I suppose things were smoothed out. Before that were there . . . ?

16. Kennedy Well, I think, and I'm probably not the right person to ask or talk about this first subject, but before I was even in Payload Operations, Marshall was in charge of the Spacelab development. I believe that Marshall initially wanted to operate the Spacelab systems, and the JSC position was that the Spacelab systems were an integrated system with the orbiting systems and it should be operated as a joint system. Of course it was decided that we would operate it as a joint system because there were a lot of shared systems and interfaces between the systems. There may have been some, I can maybe understand where maybe some of the Marshall people may not have liked that. They wanted to operate the Spacelab systems. I had heard that. That was before I became involved in the program.

17. Dunar I know there was some tension in terms of Marshall even getting into operations.

18. Kennedy That's what I was told. After I moved into the payload operations world, we had established what I had considered good working relationships with Marshall from the payload perspective. The first Marshall operated Spacelab flight was actually operated from JSC. They used the JSC POCC here and operated outside of that POCC. I thought the working ones, the people that we dealt with and worked with, maybe in the beginning may have been some residual

disagreement on how we should do some of the things, but as we began to work together, I felt like it devolved into a good team operation. By the time we flew that first Spacelab flight, which I believe was STS 9, I thought we had a good team working relationship.

19. Dunar I think that's what we're finding more and more that there's maybe a lot of tension at the beginning of a program where they're dividing the pie and who's going to handle what and then once that's established, things seem to develop rather well. Is there anything else you think that we should consider on Spacelab before we go on to Station? I've just finished working on that chapter on Spacelab. Maybe anything from the JSC perspective that we ought to look at?

20. Kennedy Probably that first flight, I think the size of the Marshall teams were probably reduced some as we learned how to operate together and became smarter about Spacelab itself and the payloads. But it seems like the initial Spacelab flight we had a larger team of Marshall POCC support personnel than we did later on in the later Spacelab flights.

21. Dunar I remember a story where I think the Marshall team had came down here and brought a Marshall banner and put it up.

22. Kennedy Big. I mean the rooms here were full, and you couldn't hardly walk through it.

23. Dunar That was part of the reason they transferred it to Marshall wasn't it that there was a space problem essentially?

24. Kennedy Well no. I was involved in that. The JSC POCC was filled as a single-string operation. It was built essentially to support one Spacelab flight at a time, and it could support up to four a year. You could think about that in terms of, if they were equally spaced, three-month opportunities where you had to configure and set up that POCC for the upcoming Spacelab flight and pretty much dedicate it for that flight until after that flight was over with. When the decision was made to build a Spacelab POCC at Marshall, the projected rate that we would fly Spacelabs was higher than four a year. I think it got up as high as maybe seven a year. Then you had to make a decision. Do you want to build a second-string, if you will, capability at JSC or do you want to build another facility someplace else. I think at the time, JSC probably decided that they did not want to build, or maybe the Agency decided I'm not sure, they didn't want to build a second-string dual capability at JSC and that we really ought to look at another location for a second Spacelab POCC. I believe

three centers were interested. Dunar Marshall, KSC, and Goddard. It's been quite a while ago, but I think there were three centers interested. I believe there was some type of proposals made and evaluations done, and I think based upon the cost estimates and possibly other factors, the Agency chose Marshall to build a second Spacelab POCC. Marshall proceeded to build that POCC. After that decision and the Marshall POCC was being built, we realized that the Spacelab flight rate was probably not going to be seven flights a year and could possibly be down in the range of four or less a year, and we may only need one facility. At that time, JSC management questioned the value of continuing, this was on their own I believe, continuing the JSC Spacelab POCC. Not the JSC POCC but the JSC Spacelab POCC because it was costing something around eleven million dollars a year to operate and maintain that facility. JSC said, "Hey there's a new POCC, a brand new one, at Marshall, and we're not going to have the flight rate we talked about before. So to save the Agency money, it might be wise to close down the Spacelab POCC at JSC." I was asked to lead that coverage. We evaluated what it would take to terminate the Spacelab support, reduce the scope of the remaining POCC to just that that would support non-Spacelab and non-high rate data type payloads, and go to a distributive system kind of operation which significantly, I mean orders of magnitude reduced the cost and still provided a POCC that we could use for virtually every kind of payload except a

Spacelab flight. The Center decided to do that. We made the proposal to, I believe at the time it was to Jess Moore, and Jess Moore agreed to do that, that it was the last thing to do. We proceed to close the Spacelab portion to do that. However, we did keep the high rate data front end for data distribution and to provide for [135?].

25. Dunar That's surprising to me in a sense that it seemed like there was competition in the area of operations pretty consistently. Maybe this is the time from which it turned, but from the time even back with Skylab on, Marshall tried to get into operations, and it seemed that JSC was resisting that.

26. Kennedy I don't know about that. I worked Skylab, but I did not know about that. I was an operations integrations officer, and I don't remember recalling that.

27. Dunar OK. Moving on to Station then. First, could we look at the divisions in these six different areas. Initially, there were just the four work packages right? Did mission operations come on later or did that come on at the same time as the work packages?

28. Kennedy The Mission Operations Project Office?

29. Dunar Right.



30. Kennedy The Mission Operation Project Office started out as an element of work package two at JSC. About two and a half years ago, the Center and the Agency and the program realized that that piece needed to be brought out of work package two and be established as a separate project office. I believe the same thing happened at Marshall where the payload project office was part of the work package one, and it had gotten taken out of work package one. That was done first with us, and then probably about a year later with payloads at Marshall, payload operations.

31. Dunar Why was that decision made? Just because of the amount of work involved? Was it not so compatible?

32. Kennedy Why was missions operations taken out of work package one? Well they're different. You're trying to manage totally different things, and if you're providing money to a work package . . . what I'm going to tell you is my supposition. I don't know this because it was also because I came over here. It just makes sense to me that if you're providing money to a work package and the work package has to make a choice between putting money, investing that money in some development of flight hardware or building some support infrastructure or capability for the operations and the money is tiny, they're going to make the decision for the flight hardware I believe. They're

also going to emphasize the development of the flight hardware. You're not going to have the focus on the mission operations development. While you're building the flight hardware, you need to build the control centers and the training facilities that are going to be used by the ground support personnel who are going to fly this vehicle and operate this vehicle. Even if there was not a question about budgets, even if that had nothing to do with it, you would want a separate manage structure because you would have very different objectives.

33. Dunar The missions operations function then in a sense has to follow behind hardware development I presume? Is that right?

34. Kennedy Well, not too far because when you're building your flight hardware, you want operations input. When you're designing, you don't want to build a piece of flight hardware that's complicated to operate and difficult to operate so the people who are building the flight hardware should be very interested in hearing what the operations people have to say about that because you want to build something that's operable.

35. Dunar Just in looking at Station and its totally, it seems like an absolute nightmare in terms of integration. You have it divided geographically and in terms of so many

different systems that have to be compatible and so forth. From your perspective, could you give me some sense of how that process has worked and what would have been I suppose the successes and problems?

36. Kennedy Well you know what we're doing today. We're heading back towards a single prime contractor which tells us all I believe that it's got to be less expensive and less difficult to build this vehicle if we had a single prime contractor. My guess is that we decided to build it in this distributive fashion so that we could sell it. So we had pieces of it distributed across the country. That was I would say a political decision and not a wise decision from the standpoint of cost and from the standpoint of having the optimum development approach. The budget situation I think has forced us to go back and reconsider that and I think it's clear now that we're about to announce the agencies about a single prime contractor. So I think the lesson there is that that's probably not the best way to build a spacecraft.

37. Dunar While you were under the system that's just being modified now, how did you go about, what was the process in other words of getting together, well you have someone in the program office at Marshall giving some direction yet you have the work packages and the other two groups all working

to try and integrate this project. What was the process of making some sense of that?

38. Kennedy You probably know this, but the program was really run from Restin from Headquarters, and that's what we call level two. Level two has as a requirements document that all six projects have requirements documentation but that requirements documentation must be in compliance with the level two documentation. So it's forced by the requirements compliance. The level two office also has a control board, Space Station Control Board. That control board is the integrating mechanism that forces not only flight vehicle requirements but ground systems requirements and program change requirements to be integrated. For example, if work package one at Marshall submits a change to the requirements and they must do that if they want to make a change in their design that impacts a requirement that's documented by the program or changes cost. When they submit that change, that change is then sent out to the other five work packages so the other two developed work packages and the three operations work packages evaluate that change in terms of the impacts to them and sends their recommendations in to level two. Then that requirement is reviewed in the context of the inputs that come back from the work packages as well as inputs from the integrating contract receipt and from the flight crew at other areas.

39. Dunar Then the decision is made at level two?

40. Kennedy Then the decision's made at level two. Now if we make a change at level three that does not impact a level two requirement or a level two budget but it does impact one of the other five level three offices, we conduct what we call bilateral meetings. For example, MOPO, Mission Operations Project Office, will have a bilateral meeting with work package two meeting here at JSC. In that meeting we'll talk about primarily intersite deliverables: IDLs. These are requirements that we have on then for things that we need for them, data, software, hardware, and possibly some requirements that they have on use that they need for their development activity. So it's handled. That's how it's integrated. We have to do the same thing with work package one and four and even international partners. It's a network.

41. Dunar Right. It's complex. How is the decision made? Sometimes you might not be able to tell to what degree a change you want implemented might impact, I'm guessing, on some of the other work packages for example.

42. Kennedy Well if it's a change that affects level two in any way, we don't have to make that decision. That change goes out, and it's evaluated by the other projects. Only when there's a change that we make internal that does not

affect the program, budget, or program document primarily at level two. So that changes significantly the type of changes that we're making independently. In those cases, we include those in the bilevel meetings that we conducted.

43. Dunar What do you think the chances are of preserving baseline Station with the changes underway right now.

44. Kennedy Well I think this option B that the President has selected is not a whole lot different than the baseline, the skinnied down baseline. I guess the answer is we're probably pretty close.

45. Dunar Do you have any coordination now, the ongoing process that the Crystal City group that is looking at the Restin?

46. Kennedy We do, and in fact that process is improving I believe. Just within the last few weeks I think it's improving. There are working groups that have been established, and the Freedom people, our people and the other Freedom people that I have seen, are on joint teams actually working with the Crystal City people to try to do the best we can. I'm on some teams and some of our people are on some other teams. We want to make it, we may not call it Freedom, but we want to make the Space Station Program real. We believe in it, and we think it is the next

logical step so we're going to do what we can to help that process.

47. Dunar Is there intercenter cooperation now in terms of that or is it mostly through the work teams?

48. Kennedy I think most of it is not between centers. It's probably mostly between the transition team and the Center. I think from my perspective, most of the work that's being done is being done between elements at a project or Center and corresponding elements at work from a transition team perspective. Now if the transition teams were to assign some piece, say to a Freedom program element or to one of the centers that needed to talk to one of the other Centers, I think that's happening or would happen.

49. Dunar Right. Do you expect . . . .

50. Kennedy I think the only area where you would get into competition between the Centers would be in roles and missions type of decision. If roles and missions decisions are addressed and they might be addressed, then you might see that kind of thing. I think it's a natural thing to happen.

51. Dunar It's happened with the redesigns before in a sense hasn't it?

52. Kennedy I expect that there's going to be some roles or missions decision that will be made. They'll be some choices probably made between JSC and Marshall.

53. Dunar What sort of choices do you think? Do you have any sort of notion based on . . . ?

54. Kennedy Well, I mean we think they're going to pick a host center and probably the two logical locations are Houston and Huntsville. So there will be choice there. If Houston is selected, Huntsville probably won't like that, and if Huntsville's selected, I don't think Houston would like that. There's probably going to be choices with respect to some of the development activities. Who's going to develop what. I don't know that, but there could be some changes there. I'm not sure what the whole spectrum is, but any time you're dealing with roles and missions that kind of thing can happen to you. What I hope we do this time, which we may not have done before, is when we make those decisions instead of saying you Houston be lead and then you Marshall and KSC be support or you Marshall be lead and you JSC be support, I hope what we do this time is they say is work practical. You JSC do this job period or you Marshall do this job period so that we go back to a more focused assignment of agency responsibilities that field centers and we don't have every field center trying to do every kind of



job. I think we've got to reduce costs and simplify integration and operations.

55. Dunar Seems from what I've heard that the host center's structure is going to be a good deal different though than the lead center in that Headquarters with the resident office will be directing things rather than with the Center itself. Is that true?

56. Kennedy I believe that's why the name was changed from "lead center" to "host center."

57. Dunar There would be some dangers in that term too I would suspect in that the Center that would be hosting it might not really be responsible for the same sense that the lead center had been.

58. Kennedy I don't think that is necessarily bad. The concept is different, but the program manager is going to be funding those support elements. The work assignments, I don't see significantly differ because it's a host or a non host.

59. Dunar Will the work package structure survive or is that still up in the air?

60. Kennedy I don't think it will. I think when you go to a single prime, one of the reasons for doing that is to make the contractor do some integration. If you have a single prime and you levy the responsibility for integrating this vehicle development on hand, I don't think you need program work packages per say.

61. Dunar But the functions that are carried on will likely still remain divided?

62. Kennedy Well, instead of having three work package projects, you might have one program element that's responsible for vehicle development, and that program office would deal with this prime contractor, but you wouldn't get three.

63. Dunar Would you expect that the Mission Operations Project Office would survive more or less the way it is now or is this all going to be reorganized?

64. Kennedy My opinion is that I don't know what the structure is going to end up looking like, but I can't help but think that it's going to have three basic elements to it. It's going to have a development element, it's going to have to have some kind of missions operations or total operations or utilizations of operations element and then it's going to have to have some science, chief

scientist/utilization of science element. I think it's going to have to have those kinds of elements. Now I don't know exactly what the structure under those might look like, but I think the program is going to have to have those three elements.

65. Dunar So that would be quite a bit different. In the two years that you have been working in this office, how have you had to adjust to all the political uncertainty surrounding Station? What impact has that had on you?

66. Kennedy Well, we have to make changes and plans. Earlier, most of the changes were based upon budget constraints. The first year that I was in the office and probably up until the end of last year, we were primarily driven by cost reductions. Any time the budget gets tight and it's four or five or six years before the first flight, the program tendency is to you've got to build the flight hardware. If it means taking money away from the operations elements, then you have to take some money away from the operations elements. The first year and a half I was in this office, most of the change that we have to deal with, the significant change was reductions in funding and then trying to decide the best way to react to those changes and reductions in the budgets.

67. Dunar So you felt the reductions then more than the other work packages because they rob from [?404]. Where has that left you?

68. Kennedy Well, in a way it made us do something that I'm not sure that we would have done otherwise. It's turned out to be good. When I first moved over here, we were building a separate control center for Space Station Mission Operations. We had an existing control center for the Shuttle. The budgets, probably more than anything else, forced us to relook at that situation and to seriously consider the development of the same control center and the same thing for the training facility. Even though the vehicles that you're supporting are very different and some of the roles and missions or responsibilities is I guess a better way of saying it are different, there is some commonalty there. We were [turn tape over 426] We were planning to upgrade, upgrade is not really the right word, to replace major equipment in the existing shuttle control center because of the age of the equipment. What we did was we moved that equipment replacement up like a year. I'm not exactly sure about the timing, but it's something like that and made it coincide with the latest possible development with the shuttle control center. Then we decided to build as many common systems as we could and share the cost. So we built a common control center and used, or we're in the process of building a common control center and well into

that, and used money from both programs to do that.

Therefore, we reduced the cost of each program. We reduced the cost of building the new control center for Space Station and reduced the cost of replacing the obsolete equipment for the Shuttle peoples. We've done equipment for kind of thing or are in the process of doing a similar kind of thing for the training facilities. These are large facilities.

69. Dunar So right now though for shuttle operations, you're still in the old facilities?

70. Kennedy Well, no actually we may be now that we've got delivered that we're using parts of the consolidated control center. I'm not exactly sure, but I think we're probably close to using parts of the consolidated control center for orbiter operations.

71. Dunar The training facilities then you said are essentially going through the same kind of process?

72. Kennedy I'm not sure of the dates when those elements will be ready to support the Shuttle programs. I believe the common elements will first support Shuttle elements before they support Station elements. We will ask them to support Station elements abruptly six months before the first element launch which is about as late as you can go

and still conduct the training that's required. The first two launches are real close together, and the second launch requires ground systems monitoring and control of that stage added to the first stage that was put up. That spacecraft after the second launch requires ground monitoring and control. We've backed away roughly six months from that period. That's as late as we can wait to train and prepare not only the crews but the ground support operations personnel to do that job.

73. Dunar The early launches don't involve Marshall systems I believe?

74. Kennedy I think the first module Marshall has is like the fifth or sixth.

75. Dunar So you're not really working with Marshall yet in terms of developing the operations for the early flights are you?

76. Kennedy In reference to the hardware that Marshall is building, we would in the context that we talked about earlier where it's important for operations to be a part of the requirements and design and development activity. That's been going on. That's just a lesson that we've learned years ago, and it's important for the operations people be a part of the development activity. So, yes we've

tried to be a part of the Marshall development activity. In terms of payload operations at Marshall, yes we have been working with those people. While it's true that the first payload operations won't occur for probably something between one and two years after the first element goes up so that means that they're lagging us a little while. We're still going to have interfaces. We're going to have to decide the two systems are going to work with each other; how the control teams would work with each other; how we conduct the planning; what is our operating concept; and so forth. In the new environment, I would not be surprised that we consolidate all of our operations, utilizations and operations at one place, for a lot of the same reasons that we're consolidating into a single prime. It's just less expensive to build and maintain and operate one control center or one training facility than it is two.

77. Dunar How do your day to day contacts with Marshall work? In other words do you wait until you have the working group meetings in order to plan or do you have somebody on site at Marshall for example that would represent mission operations or do they have somebody on cite here that would contact a liaison?

78. Dunar In the Freedom program arena, we see each other whenever we have bilevel meetings. We see each other whenever we have meetings with level two that requires the

project support. That's at least every month in terms of mission management team meetings and in terms of program review meetings. In terms of this restructure that's going on, we have sent some people to Marshall to work with the Marshall people who were working the option A design. I'm not sure whether or not, I think we may still have some people there or sent some people back. I'm not sure about that, but our people are trying to work with the different elements that are developing in the design concepts because again we think it's important for operations to be involved in initial requirements development and development activities of fight hardware and software.

79. Dunar This process of redesign with an option having been selected now, how do the people, in other words the old program in a sense is still continuing right because it can't be shut off?

80. Kennedy Yes.

81. Dunar How does that transition work from your prospective from this office?

82. Kennedy We were trying to support and have been trying to support the Freedom program and the transition team activity at Boeing. I see that effort being consolidated by this activity that I told you about that has really picked



up speed in the last couple of weeks where we see the transition team and Restin starting to work closer together as joint teams. We're having teams formed what they have co-leagues, that's a transition league and a Freedom team league and then our people are supporting these teams. So I see it migrating to a consolidating effort where we are working with the program to support the transition team activity. There will probably be a formal handover from the Freedom program to the transition team in the next month or two.

83. Dunar Somebody was telling me that it seemed at first that the transition team was working maybe too independently and that only recently have they come to the centers and begun to contact people working on the program. Is that your experience too, or did that look differently in operations?

84. Kennedy Well, you know it started out with a redesign team, and the redesign team had three subteams, Option A, Option B, and Option C, and our people supported all three of those. We sent people to Langely to work on the Option B. We sent people to Marshall to work on Option A, and we sent people on the other side of the JSC campus to work with engineering folks here on Option C. So we participated in that process, and it was a parallel activity, these three teams to work it. Once the redesign team completed the

evaluations of the options and the redesign team report was submitted and the best report was submitted and the President selected one of the options, that activity sort of terminated and the transition team was formed. So it's not that old, and the transition team probably did maybe initially a week or two or three focus on trying to build the team: getting the people together and then trying to decide on how they were going to proceed. I'm not sure there was a real lag there once that activity kind of got on its feet so to speak, I think they did try to get Restin and the Level 3 projects to support them. Probably initially it was a little more difficult at first because I think the Freedom program was probably trying to continue on and reduce cost and show the agency and show the country that the Freedom program itself could reduce cost and get down into the same cost levels that the President was interested in and still have probably a very viable meaningful program. It would certainly have the best history to it and the best pedigree because it would be based upon systems that are being developed over a period of the last several years. The expertise of the people who have worked it. I think the program office tried very hard to do that so there may have been some separate parallel activity there that was not focused enough together. I think that's sort of changed in the last couple of weeks. The transition team has kind of grown up, completed its membership, and has now made stronger efforts to consolidate the activity, and we see

some changes being made at Restin in the last couple of weeks. John Cox is coming in with a strong mandate to force better cooperation between the Freedom program and the transition team and we're certainly working to help that at Resting and make that work.

85. Dunar We touched earlier a little bit about the nature of the center rivalry between the two centers: Marshall and Johnson. This is something I think that we saw in the [552?] looking at the long-term history. It was an important theme certainly in Marshall's development. With the nature of the redesign, there is certainly the opportunity for this again. Do you see this emerging now with this transition activity going on? Is there competition for that host center role for example?

86. Kennedy I can see it being perceived that way. However, I don't think, in the meetings with Erin Cohen that we've had the last three weeks, JSC is not going after the job. JSC is not making a bid if you will or a business proposal. The work that I've been involved in at the center here is kind of characterized in two ways. One is responding to an action that we've gotten from Crystal City. For example, Crystal City asked JSC to cost consolidating all the utilization and operations at this Center because it was perceived that it was going to be less expensive from a development standpoint and less expensive from an operations

standpoint to build and maintain and operate and use the same old control center than it would be two and the same old training facility than it would be two. So we did that. I believe that the Marshall people quite naturally felt threatened by that. I know if I was at Marshall I would have felt threatened by that. Some of the Marshall people worked with us and were very cooperative. We developed that report and submitted it back to the Crystal City people who had asked for the report and Code M and the program office. So I could see if the Agency decided to implement that, there would be some contention there I would think with the Marshall folks. The other kind of activity that we had worked here, some actions that we had been given we tried to respond to, the other one is Erin Cohen has asked the Center to say, "If you have been given this job, this role, can you do it? Does it make sense? How would you implement it?" So I've been working on teams with other people at the center on trying to respond to some of those questions about if you were given this job, does it make sense? How would you do it? Prepared an initial early look at that. To my knowledge, that has not been submitted outside the center. So I don't think JSC is making a bid, if you will, for those, but I think they are thinking about how we might best react if we were asked to do one or more of those jobs.

87. Dunar The other issue I guess that would be one dividing the center, there also seems to be a common

interest between the centers maybe in preserving something of what was, has long-been perceived as sort of semi-autonomy in the centers. In the Station program with that strong lead from Restin, has that eroded this?

88. Kennedy I'm not sure I follow you?

89. Dunar In terms of having the centers in NASA's organization historically being very strong as opposed to a Headquarters role. Headquarter has developed, it seems, over the course of several programs since Apollo, stronger control and more centralized authority. It seems that with the Restin organization, that trend has continued. Do you see this as eroding the independence of the centers?

90. Kennedy I don't think so. I think it's changing, but not because of the Restin activity. I think it's changing because the centers, at least JSC is starting to realize that the agency is probably changing the way we do business. That's the reason that the agency's using the term host center now and not using the term lead center. I think it's recognized that the agency is going to change the way they do business. I think there's an evolution that's going to occur at the centers that involves a stronger program role at the centers and the center's role being changed somewhat to a support to the program or programs at that center or other centers. I'm gong to have to stop, but I want to make

one last statement, something that I'm very very concerned about. I want to make sure that however the roles and missions is allocated that we have clear responsibility assignments to the centers. I think the only thing that has caused any competition or tension between centers is where we don't have clear roles and missions assignments. I have seen it at lower levels within branches and division organizations. We've seen it at the center level. It forces that kind of situation, and I think here's an opportunity and we ought to look at this as an opportunity to correct that. All of us look toward having very clearly defined roles and missions that don't overlap. I think that will eliminate, if not 100%, close to 100% of any competition or tension between centers.

91. Dunar OK. [stop tape 632]